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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/588,022	08/01/2006	Estill Thone Hall Jr	PU040041	1257

24498 7590 12/17/2007  
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EXAMINER
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COLLINS, DARRYL J

ART UNIT	PAPER NUMBER
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2873

MAIL DATE	DELIVERY MODE
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12/17/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

### Application No.

10/588,022

### Applicant(s)

HALL JR, ESTILL THONE

### Examiner

Darryl J. Collins

### Art Unit

2873

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3, 8, 9 and 16 is/are rejected.
- 7) ☒ Claim(s) 4-7 and 10-15 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 August 2006 is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>08012006</u> . | 6) <input type="checkbox"/> Other: ____.  |

## DETAILED ACTION

### *Specification*

The disclosure is objected to because of the following informalities: Although the applicant has claimed the directions of curvature for the lens elements do not change between the lens systems within the lens family (see Claim 5), the applicant has failed to disclose such information. The data currently presented (see Tables 1, 3, 5, 79, 11 and 13) illustrates a change in curvature direction as best understood by the examiner and disclosed by the applicant (page 4, line 22- page 5, line 1).

Appropriate correction is required.

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-3, 8, 9 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Klemt (U.S. Patent Number 3,005,379).

Klemt teaches an optical system comprising a double-gauss architecture (column 1, line 11) having, with respect from the object side to the image side, a lens element (Figure 1, element L1), an acromatic lens element pair (Figure 1, element II), an aperture stop (Figure 1, element D), a second acromatic lens element pair (Figure 1, element III) and a lens element (Figure 1, element L7) as claimed in independent claim 9, but fails explicitly to teach a lens family comprising a plurality of lens systems wherein the first and last lens elements are aspheric,

however, it is very well-known in the optical art to use aspheric lenses to correct for aberrations and given the Gaussian objective as taught by Klemt, the use of such an objective in a multiple lens system to achieve a image projection would have been an obvious extension of the lens system . Therefore it would have been obvious to one of ordinary skill at the time the invention was made to modify the Gaussian objective as taught by Klemt by using aspheric lenses to correct for aberrations and using multiple objectives for image projection.

With respect to claim 2, Klemt teaches all of the claimed limitations as outlined above with respect to independent claim 1, and further teaches such a lens system wherein the lenses vary in length (Table A) as claimed in dependent claim 2.

With respect to claim 3, Klemt teaches all of the claimed limitations as outlined above with respect to dependent claim 2, and further teaches such a system wherein the system length is less than 1050 millimeters (Table A) as claimed in dependent claim 3.

With respect to claim 8, Klemt teaches all of the claimed limitations as outlined above with respect to independent claim 1, but fails to explicitly teach the use of inexpensive glass materials in the construction of the lens system. However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use inexpensive glass materials such as, but not limited to, SF14, SF15, BAK1 or BALF4 2.,as claimed in dependent claim 8, in the construction of a lens system to reduce lens cost.

Again Klemt teaches an optical system comprising a double-gauss architecture (column 1, line 11) having, with respect from the object side to the image side, a lens element (Figure 1, element L1), an acromatic lens element pair (Figure 1, element II), an aperture stop (Figure 1, element D), a second acromatic lens element pair (Figure 1, element III) and a lens element

(Figure 1, element L7) as claimed in independent claim 9, but fails explicitly to teach the first and last lens elements as being aspheric, however, it is very well-known in the optical art to use aspheric lenses to correct for aberrations. Therefore it would have been obvious to one of ordinary skill at the time the invention was made to modify the Gaussian objective as taught by Klemt by using aspheric lenses to correct for aberrations.

With respect to claim 16, Klemt teaches all of the claimed limitations as outlined above with respect to independent claim 9, and further teaches such a system wherein the system length is less than 1050 millimeters (Table A) as claimed in dependent claim 16.

***Allowable Subject Matter***

Claims 4-7 and 1—15 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: The prior art taken either singularly or in combination fails to anticipate or fairly suggest the limitations of the independent claims, in such a manner that a rejection under 35 U.S.C. §102 or §103 would be proper. Although the prior art teaches a lens system having dual Gaussian architecture, the prior art fails to teach such a lens system wherein the directions of curvature do not change between the lens systems within the lens family as claimed in dependent claim 5, such a lens system meeting the conditional requirements with respect to the maximum distortion and Modulus Transfer Function as claimed in dependent claims 6 and 10, such a lens system comprising an additional aspheric lens disposed between the first aspheric lens and the first acromatic lens, with respect from the object to the image side, as claimed in dependent claim 13,

nor such a lens system comprising an additional acromatic lens pair disposed between the first aspheric lens and the first acromatic lens, with respect from the object to the image side, as claimed in dependent claim 14.

### *Conclusion*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Darryl J. Collins whose telephone number is 571-272-2325. The examiner can normally be reached on 6:30 - 5:00 Monday - Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ricky Mack can be reached on 571-272-2333. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Darryl J. Collins  
Patent Examiner  
Art Unit 2873

12 December 2007

